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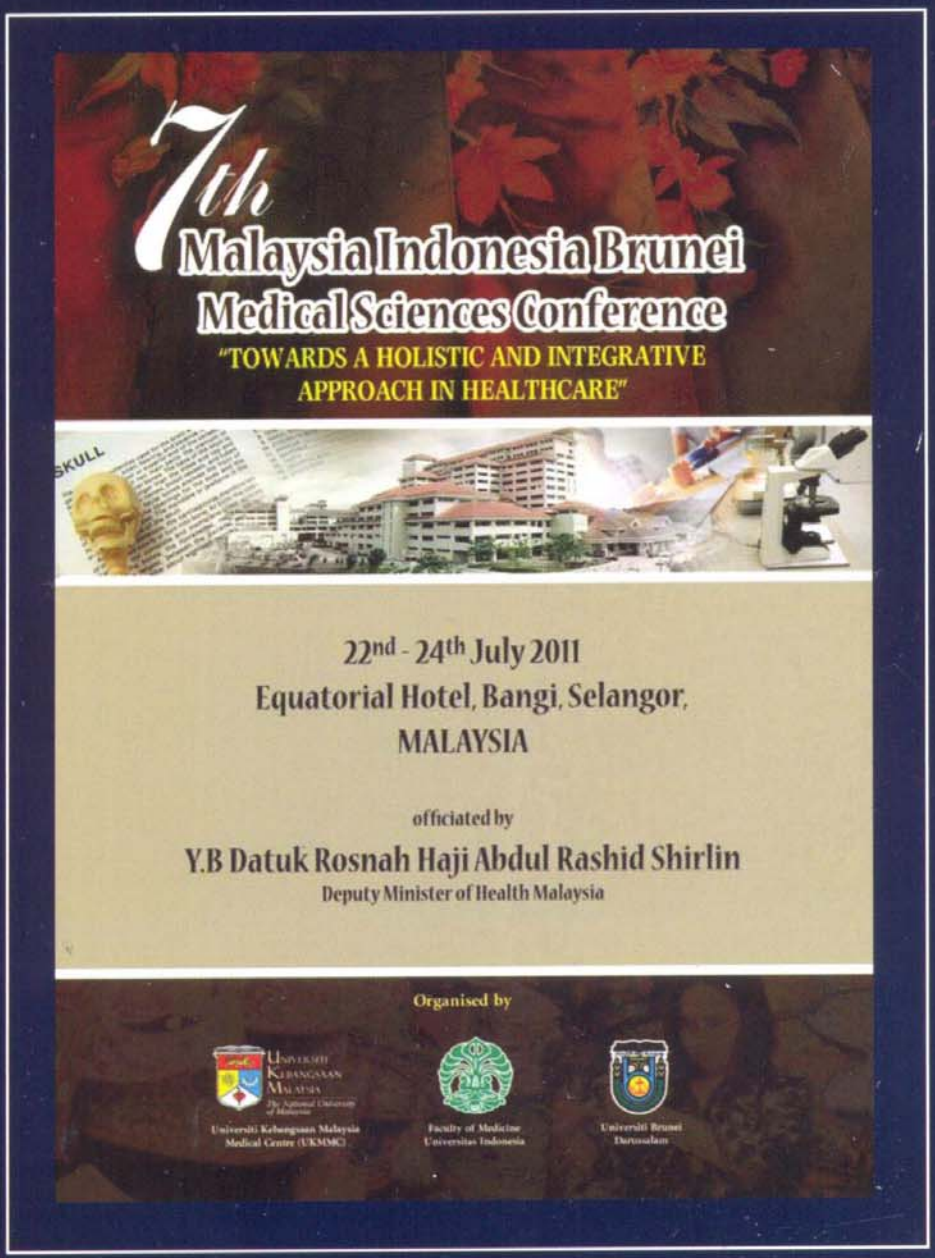

SALINITY TOLERANCE OF MOSQUITO VECTORS OF HUMAN DISEASE IN BRUNEI DARUSSALAM

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Background:
Vector-borne infectious diseases are a significant cause of morbidity and mortality in humans. The causative agents to most of these diseases are mostly transmitted by arthropod vectors with mosquitoes being the most prominent. With the increase of global temperature due to Greenhouse effect, there is a rise in sea levels from melting glaciers and ice sheets. This will cause an expansion of brackish water bodies that may serve as breeding sites for mosquito vectors.

Material & Methods:
Twelve sites were studied in this project and water samples positive for mosquito larvae were taken and analysed for salinity and pH. In the following study, 85 eggs of *Aedes albopictus* were collected and placed in separate petri dishes containing rain water, 8 ppt, 10 ppt, 11 ppt, 12 ppt, 13 ppt, 15 ppt and 20 ppt of brackish water to determine the salinity tolerance. Subsequently, another batch of larvae was tested to obtain its percentage survival in 8 ppt and 10 ppt brackish water.

Results:
Aedes albopictus was found breeding in salinities between 0 to 8 ppt and *Culex quinquefasciatus* between 0 to 6 ppt. In the salinity tolerance test, it was found that the *Aedes albopictus* larvae had a mean percentage survival of 83.4% and 6.7% in salinities of 8 ppt and 10 ppt, respectively.

Conclusion:
Aedes albopictus and *Culex quinquefasciatus* are known vectors of dengue and bancroftian filariasis in Brunei respectively. These findings have implication for understanding of the vector mosquito breeding habitats in Brunei. They point to the need to improve vector control strategies currently practiced in Brunei to curb the spread of diseases transmitted by these brackish water breeding vectors.

Keywords:
salinity tolerance, *Aedes albopictus*, *Culex quinquefasciatus*, Brunei Darussalam